

Appl. No. 09/737,226  
Amdt. Dated February 9, 2004  
Reply to Office Action of December 1, 2003

**AMENDMENTS TO THE CLAIMS**

1. (Currently amended) An intra chip or intra mutli-chip module on a shared substrate multi-wavelength optical communication system comprising:  
a number of emitters each of which emits radiation at a different wavelength;  
a plurality of detectors each of which senses radiation at a different wavelength corresponding to the radiation from one of said emitters; and  
a shared waveguide ~~on the same substrate~~ including a scattering medium configured with dispersive particles for transmitting emitted radiation to said detectors.
2. (Original) The multi-wavelength optical communication system of claim 1 in which said emitter includes a vertical cavity surface emitting laser.
3. (Original) The multi-wavelength optical communication system of claim 1 in which said emitter includes a scattering grating for redirecting the emitted radiation laterally through said shared waveguide.
4. (Original) The multi-wavelength optical communication system of claim 1 in which a said detector includes a filter for selectively passing one of said wavelengths from said emitters.
5. (Original) The multi-wavelength optical communication system of claim 4 in which said filter includes a Bragg grating.
6. (Original) The multi-wavelength optical communication system of claim 1 in which said shared waveguide scatters the lateral leakage radiation from said emitters.
7. (Original) The multi-wavelength optical communication system of claim 1 in which said emitter includes an LED.
8. (Original) The multi-wavelength optical communication system of claim 1 in which said emitter includes an edge emitting laser.

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X 9. (Original) The multi-wavelength optical communication system of claim 1 in which said emitter includes a reflector for redirecting the emitted radiation laterally through said shared waveguide.

10. (Original) The multi-wavelength optical communication system of claim 1 in which said emitters and detectors are disposed in a generally planar array.

11. (Original) The multi-wavelength optical communication system of claim 10 in which said shared waveguide is generally planar.

12. (Original) The multi-wavelength optical communication system of claim 1 in which said emitters and detectors are disposed on a chip.

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com 13. (Original) The multi-wavelength optical communication system of claim 12 in which said chip is gallium arsenide.

14. (Original) The multi-wavelength optical communication system of claim 1 in which said chip is flip-chip bonded to a silicon chip.

15. (Original) The multi-wavelength optical communication system of claim 1 in which said shared waveguide is disposed on an integrated circuit chip to provide intrachip communications.

16. (Original) The multi-wavelength optical communication system of claim 1 in which said shared waveguide is disposed part on one integrated circuit chip and part on another integrated circuit chip to provide interchip communication.

X 17. (Original) The multi-wavelength optical communication system of claim 1 in which shared waveguide includes a reflective medium for containing the scattering radiation.

18. (Original) The multi-wavelength optical communication system of claim 17 in which a reflective medium is a lower index of refraction from the waveguide.

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19. (Original) The multi-wavelength optical communication system of claim 1 in which said shared waveguide is disposed part on a plurality of chips mounted on a common substrate to provide interchip communication.

20. (Original) The multi-wavelength optical communication system of claim 1 further including an opaque barrier for absorbing the radiation.

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21. (New) A multi-wavelength optical communication system comprising:  
a number of emitters each of which emits radiation at a different wavelength;  
a plurality of detectors each of which senses radiation at a different wavelength corresponding to the radiation from one of the emitters; and  
a shared waveguide for transmitting radiation from the emitters to the detectors, the waveguide including a scattering medium configured with dispersive particles, and a reflective medium for containing scattering radiation.

22. (New) A multi-wavelength optical communication system comprising:  
a number of emitters each of which emits radiation at a different wavelength;  
a plurality of detectors each of which senses radiation at a different wavelength corresponding to the radiation from one of the emitters; and  
a shared waveguide for transmitting radiation from the emitters to the detectors, the waveguide including a scattering medium configured with dispersive particles, wherein the shared waveguide is disposed part on one substrate and part on another substrate, thereby allowing communication between circuitry on the substrates.